

APPENDIX A

Project Description

Project Description

Proposed Project Features

The information in this description is based on preliminary plans. Such information as the number and location of support structures is subject to change as plans are refined. Most of the information on project features in this EA is based on information supplied by Baja California Power, Inc. (BCP) and Sempra Energy Resources (SER). All information such as the area of impact should therefore be regarded as intended to indicate the general extent and scope of the project and related features rather than a precise evaluation of the final design.

This project proposes to construct two double-circuit, 230 kilovolt (kV) transmission lines from the existing SDG&E Imperial Valley Substation (IV Substation), continuing southerly approximately six miles to the U.S./Mexican border, where each line would connect with a corresponding transmission line in Mexico. The transmission lines would be carried on steel lattice towers from the border to just south of the IV Substation, where steel monopoles would be used for each transmission line to allow the crossing of the Southwest Power Link. The Southwest Power Link is a 500 kV transmission line that enters the IV Substation from the east at the substation's southeast corner. Suspended on the steel monopoles, the proposed transmission lines would be carried along the east side of the substation to enter it from the north, similar to the way the existing San Diego Gas and Electric Company (SDG&E) transmission line is connected to the IV Substation.

From the international border to the last tower south of the 500 kV line at the substation, both the BCP and SER rights-of-way would parallel the existing SDG&E transmission line. The right-of-way for the BCP transmission line would be adjacent to the existing right-of-way for the SDG&E transmission line and would be 120 feet wide, so that the centerline would be 120 feet east of the centerline of the SDG&E right-of-way. The centerline of the SER right-of-way would be 120 feet east of the proposed BCP right-of-way. For both the BCP and SER transmission lines, steel lattice towers would be erected on the centerlines of the rights-of-way. The towers would be approximately 900 to 1,100 feet apart and would be roughly in line with the existing SDG&E towers in an east-west direction.

In this description, the towers for both lines will be referred to by numbers consecutively from south to north, with Tower No. 1 at the international border and Tower No. 25 just south of the substation. Similarly, the steel monopoles will be referred to by numbers consecutively from south to the north of the substation. The SER and BCP lines would each have nine support structures north of the lattice towers. These would all be steel monopoles except for A-frame crossing structures for the SER line to cross under the Southwest Power Link. The crossing structures are included in the pole numbering system as No. 2 and No. 3. Tower No. 1 in the BCP line would be about 250 feet north

of the international border; Tower No. 1 in the SER line would be about 330 feet north of the international border. Tower No. 25 in both the BCP and SER lines would be about 750 feet south of the 500 kV Southwest Power Link transmission line.

At the substation, in order to clear the 500 kV Southwest Power Link transmission lines and the last Southwest Power Link tower before the entry of the 500 kV line into the substation from the east, the BCP right-of-way would diverge westerly to cross the Southwest Power Link on the west side of the 500 kV tower. The SER line would continue northerly to cross the Southwest Power Link on the east side of the 500 kV tower. The SDG&E line, which passes under the 500 kV transmission line west of the 500 kV tower, would have to be relocated about 60 feet farther westward to allow room for the BCP transmission line to pass beneath the 500 kV transmission line west of the 500 kV tower. The SDG&E right-of-way would be moved only 30 feet to the west, and would be reduced from 120 feet to 60 feet in width where the SDG&E line crosses under the Southwest Power Link.

North of the Southwest Power Link, the SDG&E line and the BCP line would both be in adjacent 60-foot-wide rights-of-way. The SER circuits, after transitioning from vertical arrays to horizontal ones to cross under the Southwest Power Link on A-frame structures, then back to vertical arrays on steel monopoles, would continue north in a 120-foot right-of-way. As the three 230 kV lines turn west north of the substation, the BCP and SDG&E line would remain in 60-foot-wide rights-of-way. The SER right-of-way, adjacent to the BCP right-of-way on the north, would be 70 feet wide from the turn west to the substation. The Imperial Irrigation District (IID) 230 kV transmission line 50-foot-wide right-of-way, immediately north of the substation, would be relocated westward to the west of and adjacent to SER's right-of-way.

From the lattice towers, the conductors for the SDG&E, BCP, and SER lines would transition to steel monopoles south of the Southwest Power Link. The SDG&E and BCP lines would angle slightly westward to pass beneath the 500 kV line on the west side of the 500 kV tower nearest the substation. The SER line would continue northward to cross under the 500 kV transmission line on special A-frame structures, with steel monopoles north of the crossing. All three lines, SDG&E's, BCP's, and SER's, would continue northward after the crossing on steel monopoles along the eastern side of the substation, turn west along the north side of the substation, and then turn south, paralleling IID's line, to enter the substation from the north. The SDG&E and SER lines would have one monopole south of the Southwest Power Link; the BCP line would have two. The SER line will have pairs of A-frame crossing structure north and south of the Southwest Power Link. North of the Southwest Power Link, the SDG&E line would have five monopoles, the BCP line would have seven, and the SER line would have six. The steel monopoles will be spaced about 290 to 540 feet apart, depending on their location. The IID line would continue to utilize the one existing wooden monopole that would be relocated and one new wooden monopole.

Access roads would be needed to each lattice tower and monopole for operations and maintenance activities. For north-south access to the lattice towers, SER and BCP propose to use the existing SDG&E access road. From that “mainline” access road, east-west spurs would be needed to access each steel tower. Because the new lattice towers will roughly line up with the existing SDG&E towers, extensions eastward from the SDG&E mainline road would be used instead of new north-south access roads to minimize permanent surface disturbance. The same east-west spur would be used for the BCP and SER towers at each tower location, also to minimize surface disturbance. There are a number of unpaved roads in the project area, especially near the substation, and wherever possible, these roads would be used instead of grading new ones.

Construction

Site preparation would begin with the grading of the SDG&E access roads, where necessary, and grading of new access roads to each tower location to allow the passage of construction equipment. Grading would create an unpaved roadbed about 10 to 12 feet wide. Access to the SDG&E access roads would be from State Route 98 or from existing roads to the IV Substation.

Towers and monopoles would be fabricated in segments in Mexico and carried to the construction site by helicopter. This would minimize the amount of laydown and work area required in the United States. Principal preparation at each tower and pole location would consist of preparing concrete foundation footings. Each tower would require four footings, one on each corner; a single footing would be needed for each monopole.

For each tower footing, a pit 3 to 4 feet in diameter would be excavated, approximately 15 feet deep. A reinforced concrete caisson would be cast in place in the excavated pit extending to above the ground surface. The concrete caissons would be allowed to cure for a minimum of seven days before the tower segments are mounted. It is anticipated that site preparation for the towers would proceed at a pace of about one and one-half sites per day.

The tower segments, an upper and lower segment for each tower, would be constructed of steel angle iron in Mexico and flown to the proper location in the United States by helicopter. The base segment would be lowered to the anchors and bolted in place by workers on the ground. Then the upper segment would be flown to the site and bolted to the lower segment. It is anticipated that the helicopter would spend about 15 minutes or less at each site to deliver the tower segments.

Two different sizes of lattice towers would be used, depending on function. Suspension towers, used where the cables will be strung in a straight line from one tower to the adjacent ones, would have a square base 30 feet by 30 feet. The last towers at the ends of the line (“dead end” towers) and three other towers in each line (“deflection” or “turning”

towers) would have a larger base, 40 feet by 40 feet. Dead end towers would be the first tower at the international border (Tower No. 1) and the last tower on the north (Tower No. 25). Deflection towers would be Tower No. 7, between the border and SR-98; Tower No. 13, just south of SR-98; and Tower No. 20, between SR-98 and the substation. Dead end and deflection towers would be about 157 feet high (above the ground surface). Suspension towers would be about 160 feet high.

Each tower would have three crossarms to carry the conductors, with cables suspended from insulators at the end of each crossarm. An additional crossarm at the top of the tower would carry, on each side of the tower, a static wire. The static wires would include the initial installation of communications fiber for system monitoring and additional black fiber for future communications use.

From the northernmost lattice tower in each transmission line, the conductors would pass on to steel monopoles to cross under the 500 kV Southwest Power Link to steel monopoles on the north side. The SER 230 kV transmission line, which would pass under the Southwest Power Link east of the 500 kV tower nearest the substation, would require special structures north and south of the 500 kV line to stabilize the SER conductors. Present plans show all three 230 kV transmission lines—SDG&E's, BCP's, and SER's—on steel monopoles north of the Southwest Power Link. However, it is possible that further refinement of design plans could use lattice towers in place of monopoles for part of the SER line.

In this description, monopoles are referred to by number, numbered consecutively from the southernmost pole (Pole No. 1) to the last pole before the conductors enter the substation. For the SER line, the pairs of A-frame crossing structures south and north of the Southwest Power Link are included in the pole numbering system as No. 2 and No. 3, respectively. Two types of monopoles would be used. Dead end and corner poles would be of heavier construction and would be about 95 feet high (above the ground surface). Suspension poles would be about 100 feet high. Dead end and corner poles in the SDG&E line would be Poles No. 1, 5, and 6. Dead end and corner poles in the both the BCP and SER lines would be Poles No. 1, 7, and 9. Please note that the features of the BCP and SER lines north of the Southwest Power Link and the relocated SDG&E and IID lines, as described herein, are based on preliminary plans and may not represent the final design.

The monopoles would be brought to the site by truck in sections, assembled in laydown areas, and lifted into place using a 90-ton crane. If towers are used in place of poles for the SER line, the towers would be brought in by helicopter and assembled as described earlier.

To safely secure the SER conductors at the crossing of the Southwest Power Link, A-frame structures would be used. A pair of A-frames on the north and south sides of the

Southwest Power Link would be required for each circuit, for a total of four. Each A-frame would consist of two angled legs on each end, joined at the top to support a crossbar. Insulators to support the conductors would be suspended from the crossbar. Each leg of the A-frames would be bolted to a cylindrical concrete footing about 32 inches in diameter. A total of 16 footings would be needed for the A-frames.

The steel monopoles would be anchored in concrete footings poured in place. The footings would be approximately 8 feet in diameter and 15 to 25 feet deep for suspension poles and larger, about 10 feet in diameter, for dead end and corner poles. Holes for the pole and A-frame footings would be excavated using an augur. Guy wires will be needed for the corner poles.

Once the towers, poles, and crossing structures are in place, conductors would be strung on the SER and BCP lines for the entire length of the transmission lines, from the northernmost tower to the substation on the SDG&E line, and through the three southernmost poles on the IID line. The IID 230 kV conductor would be spliced, with new conductor being compression-connected to the existing conductor.

Truck-mounted cable-pulling equipment would be used to string the conductors on the support structures. Cables would be pulled through one segment of a transmission line, with each segment containing several towers or poles. To pull cables, truck-mounted cable-pulling equipment would be placed alongside the tower or monopole directly beneath the crossarm insulators (the “pull site”) at the first and last towers or poles in the segment of the transmission line. The conductors would be pulled through the segment of line and attached to the insulators. Then the equipment would be moved to the next segment, with the “front-end” pull site just used becoming the “back-end” pull site for the next segment.

For the lattice towers, there would be 12 pull sites for each transmission line route, for a total of 24. The pull sites would be paired on each side of six towers in the BCP and SER transmission lines: Towers No. 1, the first tower north of the international border; No. 7, between the border and SR-98; No. 13 and No. 14, the two towers north and south of SR-98; No. 20, the tower at the angle between SR-98 and the substation; and No. 25, the northernmost tower.

For the monopoles near the substation, there would be pull sites at the first poles north of the lattice towers, Pole No. 1 in each line, and at the corners where the routes turn from north to west and from west south into the substation (Poles No. 5 and No. 6 for the SDG&E line, Poles No. 7 and No. 9 for the BCP and SER lines). Because the SDG&E transmission line in this section would be relocated westward, there would be pull sites for all three transmission lines. For the IID line, there would be one pull site at the IV Substation. Also, since each route would make right-angle turns in two locations, two pull sites for each circuit at each of these right angles, one aligned with each direction of

the turn, would be needed. The pull sites will be paired on each side of each pole, so a total of 30 pull sites would be needed for the monopoles around the substation.

Besides the conductors, both the SER and BCP lines would have two static wires atop the towers and poles above the conductors, one on each side. These static wires would include the initial installation of communications fiber (fiber-optic cable) for system monitoring, with additional black fiber for future communications use. At the 500 kV line crossing, these optical cables would be carried down the two poles on the SER and BCP lines on each side of the 500 kV line, buried in a trench from pole to pole under the 500 kV line, and carried back up the pole on the opposite side of the 500 kV line. It should be noted that SER is considering subleasing a portion or a majority of the fiber-optic cable to a subsidiary of Sempra Energy. If SER elects to do so, the fiber-optic cable for the SER line may be upsized so as to accommodate additional fibers. There would be no meaningful changes to construction techniques or to any equipment as a result of this possibility.

Construction would be completed by restoring disturbed ground surfaces to their original contours. Spoil dirt excavated for the footings would be spread on the ground, on access roads, or taken off-site for disposal in a permitted disposal site.

Areas of Construction Impact

Areas of permanent impact would be those areas where the surface of the ground would be permanently disturbed. Specifically, new access roads and footings or anchors for tower, monopole, or crossing structures are areas that would be permanently impacted. Areas of temporary impact are areas where construction activity may take place but where restoration of the surface is possible. These areas include the work areas used to erect the towers, monopoles, or crossing structures; pull sites; laydown areas for the monopoles; and the trenches for the optical cables under the 500 kV transmission line at the substation. In some places, areas of temporary disturbance would overlap.

The following calculations of areas of impact or disturbance are based on an evaluation of preliminary plans. As plans are refined, the areas of impact may change. This assessment is intended to indicate the scale of possible impacts and serve as a basis for the general calculation of mitigation requirements. It should be noted that many areas of temporary disturbance, such as work areas around towers or poles and pull sites, would certainly overlap at least partially, so the total estimate for temporary impact area is overestimated and therefore conservative (worst-case).

The steel lattice transmission towers would have cylindrical footings three to four feet in diameter at each corner. Therefore, at each tower site, the permanent impacts would be a total of 50.24 square feet (assuming a 4-foot diameter) for suspension towers, deflection towers, or dead end towers. For 25 towers, the total area of permanent impact would be

1,256 square feet for each transmission line, or 2,512 square feet for both the BCP and SER tower footings.

The towers at each tower location would line up very nearly in a straight line from west to east (roughly perpendicular to the right-of-way centerlines). To minimize ground disturbance, it is proposed that access roads to each of the BCP and SER towers be constructed by extending “spurs” from the existing, mainline north-south SDG&E access road eastward. A single east-west spur would serve both the BCP and SER towers at any given location. This means that, allowing for some variation in a straight-line connection, approximately 250 linear feet of new access road would be needed at each of 25 tower locations. Assuming that graded access roads would be 12 feet wide, approximately 3,000 square feet of access roads would be needed at each tower location. For 25 tower locations, the total would be 75,000 square feet, or about 1.72 acres.

Areas of temporary impact at each tower would include a work area around the tower that would include the area of excavation for the anchors. No laydown areas would be needed for the towers, since the tower sections would be delivered into the work area by helicopter after assembly in Mexico. Suspension towers would be 30 feet by 30 feet square at the base. Assuming that excavation for the anchors would be 12 feet by 12 feet and that the work area would be five feet from the outer edges of the excavation, a square work area 52 feet by 52 feet, or 2,704 square feet, would be needed around each suspension tower. Subtracting the 16 square feet of permanent impact area from this total yields 2,688 square feet, or 0.06 acres, of temporary impact for the work area at each suspension tower. For 40 total suspension towers, 20 in the BCP line and 20 in the SER line, the total area of temporary impact would be 107,520 square feet, or about 2.46 acres.

Five deflection or dead end towers would be needed in each of the new transmission lines. These towers, which would also be the locations for pull sites, would be 40 feet by 40 feet square at the base. With the same allowance for anchor excavations and allowing for five feet of work area around the excavations’ outer edges, the work area at each deflection or dead end tower would be 62 feet by 62 feet, or 3,844 square feet. Subtracting 16 feet of permanent impact area, the temporary impact for work area at each deflection or dead end tower would be 3,828 square feet. For the ten towers of this type in both the BCP and SER lines, the total work area impact would be 38,280 square feet or about 0.88 acre.

In addition to the work area, 12 pull sites for each transmission line for the lattice towers would add to the area of temporary disturbance. The lattice tower pull sites would be 30 feet by 50 feet or 1,500 square feet, centered on the crossarms beneath the towers. In the tower portion of each transmission line, the total area needed for pull sites would be 18,000 square feet, or 0.4 acre. For the BCP line and SER line tower segments together, 36,000 square feet or a total of approximately 0.83 acre of lattice tower related pull sites

would be needed. This is a very conservative estimate, since there would be considerable overlap of work areas and pull sites.

North of the steel lattice towers, conductors would transition to steel monopoles with crossing structures in the SER line where it crosses under the 500 kV Southwest Power Link. Footings for the monopoles would be concrete cylinders poured in augured holes. For the mainline poles, the footings would be eight feet in diameter; for corner and dead end poles, ten feet in diameter. The mainline poles north and south of the 500 kV line would have pull sites, 30 feet by 50 feet, centered on both sides under the crossarms. Other pull sites would be located at the corner poles, oriented in both directions, four at each corner pole. Laydown areas would also be needed, located near each pole site. As previously indicated, the poles would be assembled in sections on-site.

The relocated SDG&E line and the BCP line would be close together and close to the eastern and northern sides of the substation in the pole portion of their routes. The portion of the SER line directly north of the substation would be close to the BCP and the relocated IID lines. Poles would be closer than towers to each other. It should be noted that this area of the project site has been disturbed by past activity. The relocation of the SDG&E line and the construction of the BCP and SER lines would probably be carried out by different contractors using somewhat different construction methods. In addition, the existing SDG&E line structures (mostly wooden H-poles) would be removed as part of the relocation. Therefore, this area, which is the object of the relocation of the SDG&E line and the construction of the BCP line (that is, the area immediately east and immediately north of the IV Substation), would be subject to fairly intense construction activity.

It is reasonable to regard the entire corridor containing the BCP and relocated SDG&E and IID transmission lines in this location, for the purpose of evaluating temporary impacts, as a construction site rather than as discrete areas of activity and disturbance. (Discussion of potential impacts of the SER line in the area east and north of the IV Substation is provided below.) So regarded, the corridor would be about 2,500 feet long and 120 feet wide along the east side of the substation. Immediately north of the substation, the SER right-of-way and IID line relocation area would be adjacent to the BCP and SER work areas in an area about 600 feet long and 190 feet wide. Combined, this area of work activity on the east and north sides of the substation would be about 414,000 square feet or about 9.5 acres. It is likely that not all of this corridor would be disturbed, but for the reasons stated above, it is difficult to determine at this time precisely how much disturbance would occur, or where. This method for calculating impacts results in a conservative overestimation of the impacts in this area. The area should be considered an area of potential environmental effect within which impacts would occur to a smaller total area.

Since the SER line would be 400 to 500 feet east of the BCP line to clear the Southwest Power Link tower, it would not be included in the SDG&E/BCP corridor on the east side of the substation, so that evaluating discrete areas of temporary impact is more appropriate for the SER line along this area. At the southern dead end pole on this segment, Pole No. 1, an area centered on the pole, 90 feet wide, and 50 feet long would include both pull sites and a work area. This would amount to 4,500 feet, or about 0.1 acre. At the northeastern corner pole, Pole No. 7, an area centered on the pole and 90 feet square would include all four pull sites and a work area. This would amount to 8,100 square feet or about 0.19 acre.

Between Pole No. 1 and Pole No. 7 of the SER line, there would be three suspension poles and two pairs of A-frame structures. An additional suspension pole, No. 8, is located between corner Pole No. 7 and is within the part of the BCP/SDG&E area of potential effect directly north of the substation. A work area around each pole about 25 feet in diameter would be needed, and a work area for each pair of A-frames would need to be about 25 feet by 135 feet. The total area of work areas of these dimensions would be about 8,220 square feet or about 0.19 acre. Additional areas of temporary disturbance in this segment would result at laydown areas. A laydown area about 50 feet by 150 feet, or about 7,500 feet, would be needed at each pole location. For 7 locations on the SER line, this would total 52,500 square feet, or about 1.21 acres.

At the Southwest Power Link crossings, the static wires for the SER and BCP lines would be brought down the monopole south of the 500 kV line crossing and placed underground in a trench to cross the 500 kV line to the monopole north of the 500 kV line, and there brought back up the monopole to the upper crossarm. The trench would be relatively shallow and would be dug by hand. In the BCP/SDG&E line area, the trench temporary impacts are included in the construction corridor described above. In the SER corridor, the area of temporary impact for trenching would be about 3 feet wide and 900 feet long, about 2,700 square feet or 0.06 acre.

Permanent impacts in the monopole section of the SDG&E, BCP, SER, and IID transmission lines would result from structure footings and access roads. For suspension poles, the footings would have a surface area of about 50.24 square feet. There would be 15 suspension poles in all four lines for a total permanent impact area from suspension pole footings of about 755 square feet. Dead end or corner poles would have a footing area of about 78.5 square feet. The nine dead end or corner poles would have a total footing permanent impact area of about 707 square feet. The 16 footings for the SER crossing structures would have surface area of about 5.3 square feet each, for a total of about 85 square feet. Adding these figures, the total area of permanent impact for structure footings for all three lines would be about 1, 547 square feet, or less than 0.04 acre.

Access roads would also be areas of permanent impact. The access roads to the monopoles could be configured a number of ways. There are a number of roads already present in the area east of the substation that might be used. If it is assumed for worst-case impact assessment that all new roads would be needed to access each structure location, and that the new roads would be configured in a way to minimize impacts, a total of about 5,650 linear feet would be required to access all poles. If the access roads are 12 feet wide, this equates to approximately 67,800 square feet or less than 1.56 acres of permanent impact for access roads associated with the poles would result. Total permanent impacts for the monopole portion of the project, including the footings and access roads for the SDG&E, BCP, IID, and SER lines, would therefore be approximately 1.6 acres.

For the entire project (the moving of the SDG&E and IID lines and construction of both the BCP and SER lines), the total area of permanent impact would be approximately 3.38 acres. Discrete areas of temporary impact, as assessed above, would total approximately 5.92 acres. In addition, there would be unquantified areas of temporary impact within the 9.5-acre area of potential effect for the SDG&E and BCP lines near the IV Substation.